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ABSTRACT

The study investigated achievement motivation of children with learning and behavior problems and examined effects of various types of verbal instruction on performance tasks and the resulting relationships of these verbal instructions to achievement motivation. The subjects were 48 third and fourth grade children diagnosed as having learning and/or behavior problems. Testing instruments were Bialer-Cromwell's Children's Locus-of-Control Scale (LCS), Coding Test and Digit-Symbol Test taken from Wechsler Intelligence Scale for Children, and NIM (Marienbad) game. Based on their LCS scores, the 48 Ss were divided into high and low achievement motivation groups. Each group was then divided into three experimental groups. For the Coding Test, the NIM, and the Digit-Symbol Test, each of the three groups received different verbal instructions and was told that their results were above average, or below average. Results indicated that level of achievement motivation in both experimental and contrast groups was the same as measured by the LCS, that experimental Ss in the high achievement motivation group performed better than Ss in the low achievement motivation group, and that within the low achievement motivation group, performance was reinforced by previously announced results. (CB)

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U.S.O.E. Grant No. OEG-0-9-470117-3664(721)

by

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1971

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University of Oregon

Eugene, Oregon

CHAPTER I

The Experienced Teacher Fellowship Program in Learning and Behavior Problems (ExTFP) offered by the College of Education at the University of Oregon and the Bureau of Educational Personnel Development of the U. S. Office of Education, was begun in 1967 and has operated continuously since that time. The primary objectives of the program have been the training of elementary school teachers in Oregon as master classroom teachers, as resource teachers, and as district or community consultants for educational transformation. Eugene's School District 4J, in collaboration with the program, made available to the ExTFP a number of children with severe educational and/or behavioral problems. A typical child referred to the ExTFP for remedial education would be at least one grade-level behind his peers (as measured by a standardized achievement test) and be ranked within the lower-quarter percentile of his class. His behavior in the classroom might be characterized by acting out -- i.e., disruptive behavior which disturbs his peers; tend toward withdrawal; dependency, and a very short attention-span, resulting in a diminished academic level of achievement. These children possess characteristics usual for those with learning disabilities (Clarizio and McCoy, 1970; McCarthy and McCarthy, 1969; Kirk and Bateman, 1962; Kirk, 1968); and at the same time show signs of emotional disturbance (Quay, Morse and Cutler, 1966; Patterson, 1965). The ExTFP Fellows, teaching these children in an exploratory setting of remedial education, have been quite successful in coping with remedial-behavior problems and in raising academic-

achievement levels, especially in the areas of mathematics and reading (Hotchkiss, 1971).

While teachers readily acknowledge that motivation is of critical importance in educating children, it is all too apparent that very few disciplined studies have investigated the matter of motivation systematically. As Morse (1969) points out, after control -- particularly with the kind of children mentioned above -- the next most pressing problem is motivation. These children often have a history of poor school adjustment, negative attitudes toward teachers and school, the lack of any sense of self-accomplishment, and a negative concept of self.

The major educational goal, as Rabinow (1955) suggests, is to get them ready for school while they are actually in school. So long as we choose to utilize this principle of "getting them ready" while they are actually in school, an investigation of achievement motivation among these children will be valuable. This study is not for the purpose of finding a "key" with which to "turn these kids on". It is, rather, an exploratory study in an area where virtually nothing here-to-fore has been known.

Review of Relevant Research

Studies of Need for Achievement

Studies of motivation in general can be traced back to the works of Schopenhauer and Darwin, who placed anti-intellectual emphasis on primordial struggle. But it is McDougal who is credited with the first psychological interpretations of the Darwinian stress on "instinct." However, he

retained some aspects of Schopenhauer's "will," Darwin's "struggle for survival," Bergson's "elan," and Freud's "libido" (Allport, 1962). The more systematic studies of human achievement motivation began with the now classic work by McClelland and Atkinson in 1947. During the following ten years, their studies dominated the field of achievement motivation. Although the basic premise was that all motives are learned (McClelland, Atkinson, Clark, and Lowell, 1953), the first experiment was carried out, not with a "learned" motive, but with hunger (McClelland and Atkinson, 1948). They found that the subjects who were studied under several conditions of food deprivation projected their need for food to the Thematic Apperception Test (TAT). While these investigations in an early stage reflected the strong influence of H. S. Murray (1938) (in terms of their use of the need for achievement), later experiments showed more influence from Lewin's (1935) "dynamic" theory of personality. Using the same projective test, they established several conditions for creating different degrees of "need for achievement" (nAch). The subjects were divided into six groups and underwent six experimental conditions which were designed to manipulate nAch. The conditions were: "relaxed," "failure," "neutral," "success-failure," "achievement-oriented," and "success." In order to establish "failure," "success," and "achievement-oriented" conditions, falsified norms were used at the college level. For example, the Ss were told that their performances were above or below average under "success" and "failure" conditions. NAch was measured by the TAT which was given immediately after the manipulations. Defining nAch as "the subject's concern over competition with a standard of excellence," they carefully developed an objective scoring system. It

was found that experimental manipulations used to arouse achievement motivation were successful with a group under "failure" and "success-failure" conditions. The results showed a striking difference from those obtained with the groups under the "relaxed" and "neutral" conditions, indicating that it was possible to manipulate nAch experimentally.

Their next step was to extend the definition of "achievement motivation" to strivings for high status, social and scholastic accomplishments, and any motivational states which thrust a person upward. Thus, it was only logical to hypothesize that the nAch was correlated with academic grading, socio-economic status, I.Q., and aspirational level. A large number of studies have been published investigating the relationships among these variables.

An early attempt at this kind of study was reported by McClelland (1953). He found that there existed a correlation coefficient of .51 between the nAch measure and grade point average (GPA) of 30 college students. On the other hand, Lowell (1952), one of McClelland's associates, reported that the total scores and sub-scores of the American Council on Education (ACE) Psychologyical Test for College Freshmen were not significantly different for the high- and low-achievement motivation groups. The mean linguistic subscore for the "high achievement motivation" group was, however, significantly higher than that for the "low achievement motivation" group. The latter finding raised the question that nAch may be measuring an aspect of linguistic abilities.

At the University of Minnesota, Morgan (1952) dichotomized 132 sophomore students on the basis of GPA. His study found that high

academic achievers scored significantly higher than low-achievers in achievement motivation (i.e., on the nAch scores). Weiss (1959) found that the simple product-moment correlation coefficient between nAch and GPA was .34. The Ss were 60 male students in an introductory psychology class at the University of Colorado. The co-efficient was significant at the .05 level.

Bending (1958), using 110 male students in an introductory psychology class, reported that the correlation coefficient between the nAch score and a student's cumulative quality-point average was .22 (significant at .05) and that the coefficient between the nAch and course grades was .02 (non-significant). A factor analysis of the intercorrelations of nAch, a vocabulary test, course grades and Edwards' Objective-Need Achievement Scale yielded two orthogonal factors. The vocabulary test and course grades were strongly loaded with a verbal factor. Course grades and two need measures were found to be weakly loaded in favor of achievement motivation. Adding the nAch to the Vocabulary test failed to increase the accuracy of prediction.

Marlowe (1959), in a unique study, used Fitzgerald's technique of nominating high achievement-oriented persons. The results obtained from 44 members of a fraternity house yielded a significant correlation of .33 between nAch measure and nominations by fraternity brothers. In an effort to derivea multiple regression equation based on eight measures, Chahbuzi (1956) found that the correlation coefficients between first term course grades and the nAch was .35 which was significant at the .01 level. The subjects in this study were 224 entering College of Agriculture

pupils at Cornell University.

Cole and his associates (1962) matched two groups of 23 upper-division students for scores on the College Entrance Examination Board Test, sex, and major field of study. The difference between the two groups was that the first group had performed remarkably well during the first two years in college, while the alternate group had only average grade records -- neither dangerously low nor outstandingly high. The second experiment was quite similar to the first, except that the subjects were freshmen and nAch was given before they had received any evaluation. In the second experiment, comparisons were made between nAch and GPA at the end of the Ss' first term. There was a significant difference, at .01 level, between the two groups. However, it was the low incidence of superior males in the nAch scoring which led to the significant findings above -- contrary to the prediction. In the second experiment, the direction of findings was similar, although the findings did not reach an acceptance level of significance. Thus, the authors questioned the validity of nAch as a measure of academic achievement motivation.

Parrish and Rethelingshafer (1954) matched high and low achieving groups for eight variables which he considered to have an affect on school achievement. The variables were: age, foreign parentage, marriage status, post-high school graduation educational discontinuance for at least one year, expressed interests, parental education, and mean percentile rank in ACE. A t-test was used to examine the difference between the means of the two groups, using the GPA as a criterion. The results did not yield a significant difference.

McKeachie (1961) reported his large-scale study at the Ninth Annual Nebraska Symposium on Motivation. In his sample, there were 825 students altogether, consisting of 208 students majoring in French, 188 in mathematics, and 213 in psychology. The subjects included 254 men and 355 women. McKeachie also used course grades as a criterion to judge the students' achievement. The results, analyzed by means of Lancaster's technique for partition of chi square, indicated that there was a significant interaction, at the level of .05, between nAch and grades. However, new data presented by McKeachie (1968) failed to support the hypothesis that the nAch is significantly related to course grades. The interaction between nAch and a measure of achievement cues in the class also failed to show a relationship to grades.

A sociological study was done by Littig and Yeracaris in 1963 in which they used a multi-stage sample of 400 heads-of-households or the wives of heads-of-households. This study was carried out in conjunction with an investigation of the effects of educational television on the attitudes of a community's members toward education. The criterion used for achievement motivation was the educational level of the subject. The analysis of data revealed a sex differentiation in achievement motivation. While it was found that for men the level of the subject's educational achievement was positively related to the nAch scores, this was not the case with women.

In Morgan's second study (1953), the subjects were boys in the junior class of high schools. Five groups of boys ranged from 39 to 62 members. Correlation coefficients obtained between nAch and sophomore grade averages

were .16 and .19 for Form T and Form F of the TAT, respectively. Those between nAch and junior GPA were .25 and .29. The correlation coefficient of .29 was significant at the .05 level. The relationship between the nAch scores and school grades tended to be somewhat less when intelligence was held constant by use of the partial correlation technique. The above findings were confirmed by Shaw's (1961) study. He matched 89 subjects for scores on the California Test of Mental Maturity, while dichotomizing the subjects on the basis of academic grades. Testing the null hypothesis that there was no significant difference in achievement motivation between underachievers and achievers, he found that the hypothesis was tenable.

Rosen (1956), a sociologist, investigated the relationship between the need for achievement and scholastic achievement, as a part of his studies in the psycho-cultural dimension of social stratification. Using the chi-square to examine the differences between scores made by students who made B or above and those who made C's or below, he found that the result was significant beyond the .001 level. Rosen also studied the differences in youngsters' stated interests in attending college or not. The data did not support the hypothesis that students with a high achievement motivation have greater aspiration to attend college.

Cox (1962) conducted a study on achievement motivation in Australia. Following procedures similar to the one described above, he found that there was a significant difference in nAch scores between boys whose grades were above median and those whose grades were below median. The subjects were from the suburban area of a large city in Australia. However, it should be noted that in this study only one card (Card #1) from the TAT

was used as a stimulus. The data supported his hypothesis that high achieving boys tend to perceive an ambiguous stimulus as a study situation. Another report by Caplehorn and Sutton (1965) came from Australia. The subjects were a group of 10-to-12 year old boys attending a Melbourne independent (i.e., non-government) school. Teachers' ratings were used as a criterion, in addition to scores in arithmetic and English from two regular term examinations. Two kinds of stimuli were used to assess achievement motivation (TAT vs. non-TAT pictures). They found that the TAT-type test was significantly correlated with arithmetic and English scores. On the other hand, they found that the non-TAT type stimuli were not correlated with the criteria at a significant level. When teachers' ratings of achievement motivation were used as a criterion, the results supported the hypothesis that there was a significant relationship between teachers' ratings and achievement motivation of the child.

In the preceding section, the relevant literature in achievement motivation has been reviewed. As previously noted, McClelland and his students have given tremendous impetus to the studies in this area. The concept of a "need for achievement," and the technique for its measurement, in particular, have been the predominant forces on motivational and behavioral research during the past 25 years. Almost all studies have relied heavily on this TAT-like instrument to measure achievement motivation.

To summarize, nAch and the measurement techniques of it developed by McClelland, appear to be able to assess motivational activities to some extent. This has been particularly so in experimental situations in which nAch was evoked by experimental manipulations. A limited number of

sociological studies have indicated that achievement motivation is positively correlated with the subject's attained education level. However, attempts to correlate socio-economic variables with the nAch scores have yielded inconclusive results.

Many investigators have attempted to find the relationships between the nAch scores and such criteria as course grades, scores on standardized tests, teachers' ratings, peers' judgments, etc. The overall results are not quite in agreement, however. Some evidence indicates that corelation coefficients are high enough to be significant if the subjects are male and pre-college or college students. Yet, an examination of all the correlational studies reviewed above indicates that approximately half the studies show significant relationships between nAch and the stated criteria, while approximately half do not reach significant levels.

The above findings would indicate that, despite voluminous amounts of studies, the use of TAT technique to measure achievement motivation is not as reliable as it has been considered. Besides, the weakest point in the nAch technique is its manifest unreliabilities. Nunnally (1962), Anastasi (1957), and Jensen (1959), have all stated that any projective technique is particularly weak in terms of reliability. McClelland (1953) himself reported a test-retest reliability coefficient which was as low as .22.

Thus, there was a clear need for a technique to measure nAch that did not rely on the TAT.

Social Learning Theory of Achievement Motivation

Following the lead advanced by Lewin (1944) that the values of success and failure at any performance level are weighted by a subjective probability factor, Rotter (1954), Tolman (1955), Edwards (1954, 1955), and Atkinson (1957) have made a number of theoretical contributions to the social aspects of human motivation. Only Rotter's theory and research testing his theory will be reviewed here because they are most directly related to this study.

It was in J. B. Rotter's (1954) social learning theory that the concepts of "expectancy" and "reinforcement" were brought together for the first time in a systematic and definitive fashion. According to Rotter, the effect of reinforcement is not a simple stamping-in process. Rather does it depend on whether the person perceives a causal relationship between his own behavior and the reward. He expresses the essence of his social learning theory as follows:

> When reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control (Rotter, 1966, p. 1).

Rotter's equation for predicting behavior potential is as follows:

$$BPx, s_1, ra = f (Ex, ra, s_1 \& R\ Va)$$

The equation is read as the Potential for Behavior x to occur in a situation 1 in relation to reinforcement a is a function

> of the expectancy of the occurence of reinforcement a following behavior x in a situation 1 and the value of reinforcement a. (Rotter, 1954, pp. 108).

Because of an insufficient amount of experimental data at that time, the sign & was used as the only indication of the nature of the mathematical relationship between expectancy and reinforcement value.

In the later version of the theory, Rotter (1961) extended the definition of the control dimension so as to distribute individuals according to the degree to which they accept personal responsibility for what happens to them. However, the general definition of "internal" versus "external" control remained the same: "internal" control refers to the perception of positive and/or negative events as being a consequence of one's own actions, and thus under personal control; whereas "externaL" control refers to the perception of positive and/or negative events as being unrelated to one's own behavior in certain situations, and thus beyond personal control.

The earliest published report to test Rotter's theories is that of Phares (1957). He gave one group of subjects instructions which emphasized that success on a task was due to skill, while the second group was given instructions which emphasized chance. Despite the fact that the two groups received the same number and sequence of reinforcements, contingent upon line and color matching tasks, the Ss with skill directions showed expectancies that the task under their control more frequently than the Ss with chance directions. The results supported the hypothesis that the individual's perception of the situation determines his expectation that a given behavior will be followed by a given rein-

forcement.

A year later James and Rotter (1958) reported the results of their investigations in this series. As in Phare's experiment, a task (viz., a card guessing problem) was under the control of the experimenter although it could appear non-controlled to the subject. Employing the same strategem of the "skill" versus "chance" condition, they found that under "skill" conditions the usual superiority of partial reinforcement was not maintained. In fact, under these conditions, the 100%-reinforcement schedule led to less rapid extinction than the 50%-reinforcement schedule. When money betting was used as an index of experimental extinction, Holden and Rotter (1962) found that "skill" subjects took considerably less time to extinguish than "chance" subjects. All of these studies support Rotter's postulation that under "skill" conditions the individual tends to perceive positive and/or negative events (card guessing and motor skill apparatus in this case) as being a consequence of his own actions.

Atkinson (1960) used the French Test of Insight to measure achievement motivation. He and his associates tested the hypothesis that persons with high achievement scores would be more inclined to strive for success, and those with low achievement scores would be more inclined to avoid failure. Sixty-six college men played a shuffleboard game in which they were allowed to shoot from any of 15 lines varying in distance from the target. Subjects high in achievement motivation scores shot initially from intermediate distances significantly more than subjects low in achievement motivation. The result supported the hypothesis that persons with high achievement motivation tend to take less risks than

the persons with low achievement motivation. Their subsequent study (Atkinson and Litwin, 1960) supported the above findings, indicating that persons in whom the motive to achieve success is stronger than the motive to avoid failure tend to prefer tasks of intermediate difficulty, and show greater persistence in working at an achievement related task. The criteria used in their experiment to measure achievement motivation were the distances of shots in a ring-toss game and the time spent working on a final examination (as reported by students).

Clark (1956) investigated the relationships between hope of success and fear of failure as measured by the TAT and level of aspiration as measured by a questionnaire. The results indicated that the Ss at the extremes of the continuum on the scale had lower nAch scores than Ss in the middle of the continuum. The author maintained that nAch scores could not be used as an index of the fear of failure and hope of success. Mahone (1965) reported that persons low in achievement motivation and high in achievement-related anxiety showed a higher ratio of discrepancy between their vocational aspirations and their own abilities (as judged by clinical psychologists and by themselves) than did subjects who were high in the will to achieve and low in anxiety.

DeCharms and Dave (1965) have also reported a study in which motor-performance was used as a criterion. In order to test the hypothesis that subjects who maintain a hope of success will take more moderate risks than subjects who fear failure, the subjects were given two measures of risk-taking behavior. Both were developed by DeCharms and Atkinson. The special motor-performance task was shooting a volleyball into a

fixed bushel basket at floor level from varying distances. The results confirmed the hypothesis. The subjects with high hope of success and those with an exaggerated fear of failure both shot more successfully in the 70 practice trials than did the subjects who had low hope of success. They also were less inclined to take risky stances during their 20 free-choice attempts. However, they found that the TAT measure used by McClelland and Atkinson did not significantly correlate with risk-taking behavior.

Based on Atkinson's risk-taking model (that individuals high in the fear of failure and low in the need for achievement may react in an atypical manner to success or failure experiences), Moulton investigated an interesting hypothesis in 1965 that such individuals may raise their aspirations following failure and even lower them after success. The investigator gave 93 high school students a "scrambled-words" test. This was immediately following knowledge of "success" or "failure" experience on a short test comparable to the similarities subtest of the WISC. The results supported Moulton's hypothesis that atypical shifts in the level of aspiration occur more frequently after success or failure experiences among subjects whose motivation to avoid failure exceeds their motivation to approach success than it does among subjects who show the opposite motivational pattern.

Feather (1967) investigated the interaction among "chance" and "skill" conditions, task-performance difficulties, and the attractiveness of success versus the repulsiveness of failure. In an experimental situation in which the subject guessed correct numbers and chose tasks

at different difficulty levels, he found that as a task became more difficult, success was seen as more attractive and failure as less repulsive. This was particularly the case when success or failure reflected upon the abilities of the person. It was also found that under conditions in which the outcome was determined by luck, the repulsiveness of failure was relatively low. Still another finding indicated that expectations of success could be modified when a subject could see through pre-test experience that success or failure hinged on individual performance.

It is Feather (1961) who is credited with first attempting to use persistence as a dependent variable in measuring achievement motivation. He reported a study in which persistence was used systematically to investigate the relationships between achievement motivation and task difficulties. Eighty-nine male college students were given the McClelland achievement motivation test and the Mandler-Sarason Test Anxiety Scale. Then, these subjects were asked to trace all the lines of 4 unicursal puzzles without lifting a pencil from the paper and without tracing over any line twice. Two of the four tasks, presented to each subject as part of an important task were, in fact, insoluble. The subject could turn to an alternative achievement task whenever he desired. Using the number of times the subject persisted in any insoluble task as the dependent variable, Feather found that subjects high in achievement motivation and low in test anxiety persisted longer on the tasks when they thought initial probability of success was high than when they thought the probability was low. In a subsequent study (1963), he specified the difficulty level of tasks in relation to two variables. The same trend was found even when

the task was perceived very difficult so long as the subjects were high in achievement motivation and low in test anxiety.

In line with studies of persistence, Lefcourt and Ladwig (1965) conducted an intriguing study in which three groups of Negro inmates, one of which was comprised of those skilled in jazz, played a competitive game with a white examiner. The game employed was NIM (the "Marienbad" game) in which two players picked up matches in turns to leave the opponent with the last remaining match. Although previous studies (Katz and Cohen, 1962; Katz and Benjamin, 1960) indicated that Negroes tended to feel inadequate toward whites even when they are given objective evidence of equal mental ability, the authors were successful in modifying the low achievement motivation of Negro Ss by leading one group of subjects to believe that NIM was a test which measured their ability as jazz musicians. Despite constant defeats by a white examiner, the group of jazz musicians persisted significantly longer than either of two control groups.

This section has reviewed three different bodies of literature: that concerning the reinforcement-responsibility theory; that on the relationship between achievement motivation and choice of task difficulty; and that relating to persistence. Studies based on Rotter's social learning theory support the notion that an individual acquires a certainty of the causal relationship between his own acts and reinforcements when he has a high expectation that reinforcement is probable. It was shown that the individual is more highly motivated when he perceives the outcome as under his own control. This was particularly so in "skill" versus "chance" situations.

The studies of Atkinson and his associates suggest that the individual with high achievement motivation prefers tasks of intermediate difficulty in a motor-skill situation. Moulton's study indicates that "success" or "failure" experience affects shifts in the level of aspiration on subsequent tasks. However, evidence on this theme is rather sparse. Feather's finding is the most interesting in that as a task became more difficult success was seen as more attractive and failure as less repulsive This was particularly true when success or failure reflected upon the supposed abilities of the person.

An attempt to use persistence as a measure of achievement shows promise. Persistence itself can be conceived in several ways. It can be a trait underlying behavior, a resistence to extinction, or a motivational phenomenon. The latter view is essentially founded on the Lewinian theory that a person significantly separated from a goal which is, nonetheless, in sight, experiences driving forces which urge him toward that goal. The more recent trend to construe persistence as a motivational phenomenon is derived from the concept that persistence is an indicator of strength of motive -- not only in transient situations but also in relation to general and inclusive life goals (Feather, 1962).

The Locus of Control Scale

A corollary to Rotter's internal-external control theory was the need to develop a technique for tapping individual differences in the perception of locus of control. The first attempt to measure the internal-external dimension as a personality variable was made by Phares (1955). He designed a 13-item scale to measure "attitude," i.e., the personality

characteristic of attributing the occurrence of reinforcements to chance rather than to oneself. James (1957) lengthened the Phares scale and found a significant correlation between the James-Phares scale and the Incomplete Sentences Blank personal adjustment score. Rotter (1966) devised the Internal-External Control Scale (I-E Scale) which was a 29-item forced-choice-type measure. Extensive data on the I-E Scale revealed that the correlation coefficients of internal consistency varied from .65 to .79 in 10 studies. The test-retest coefficients ranged from .49 to .83, with intervals ranging from one month to two months in seven different studies.

One set of criteria used to validate the I-E Scale was based on an ethnic group. In view of the history of the Negroes in the United States, it was legitimate to assume that racial segregation and discrimination have meant to Negroes that their own efforts have not led to reinforcements -- unless "fate" or "luck" intervened. Battle and Rotter's (1963) study successfully predicted greater externality among Negroes than among whites. This finding was supported by the Lefcourt and Ladwig studies (1965, 1968). That report indicated that Negro prison inmates showed greater externality than white inmates. The latter did not differ from the normative population on the I-E Scale and on the Powerlessness Scale. It is of interest to note that the I-E Scale successfully predicted the degree of committment manifested toward effecting social change in Gore and Rotter's (1963) study. Using subjects enrolled in a Southern Negro college, the study found that the subjects high in internality signed statements had expressed the greatest amount of interest in social action ("March on Washington" and

formation of a "freedom riders" group) while the group high in externality expressed no interest in participation (or merely minimal involvement, such as attending a rally).

Since the I-E Scale was constructed mainly for adults, Bialer (1960) introduced a scale designed especially for children, The Children's Locus of Control.* The Scale consists of 23 items answered "yes" or "no." Following Rotter's theory, the Scale was designed to measure the extent to which a child construes both positive and negative outcomes as being consequential to his own actions. Bialer (1961) administered his test to retarded and normal children -- predicting that locus of control, mental age, gratification pattern, and the preference for return-to-completed as opposed to return-to-interrupted tasks, would be interrelated. With an N of 89, he found that locus of control correlated positively with mental age and with deferred gratification patterns.

Miller (1961), using the Children's Locus of Control Scale (LCS), divided a group of 90 retardates into 45 subjects high in internality and 45 subjects with external locus-of-control. They were given a serial learning task with the criterion for success being two consecutive errorless trials under both success-failure and neutral conditions. The result was that the performance was uniformly high in the internal locus-of-control group -- regardless of learning climate -- and that it was also high in the external-control group in the success-emphasis learning climate. However, learning rate was markedly reduced in the external locus-of-control group

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* Rue Cromwell was instrumental in developing the Scale. Therefore, it is often referred to as the "Bialer-Cromwell Locus of Control Scale."

under failure-climate conditions.

Miller (1961) investigated the reliabilities of the LCS, indicating that with 100 institutionalized retardates, the Miller Version of the Bialer-Cromwell Locus-of-Control Scale had an odd-even reliability coefficient of .87. Total test reliability, determined by Rulon's formula, was .94. However, the scale was criticized for its basic format (Nowicki and Strickland, 1970) -- i.e., over half of the items were consecutively keyed in one direction: This was an open invitation for a response style which could significantly affect scores.

In response to this criticism, Gozali and Bialer (1968) investigated intercorrelations between the Locus-of-Control Scale and response set measures. They found that, with an N of 189 retardates, the test-retest reliability of the original scale was .84 over a one-week period and with a correlation coefficient of .64 between the original forms of the Scale and the reversed form (item-reversal techniques). Both coefficients were significant beyond the .001 level. They concluded that the Locus-of-Control was not as vulnerable to acquiesence response sets as Norwicki and Strickland had charged.

Locus of Control and Achievement Motivation

Another interesting topic for researchers in this area was to examine the relationship between locus-of-control and achievement motivation. It was hypothesized that those at the "internal" end of the scale would show more overt striving for achievement than those who felt they had little control over their environment.

The notion was first supported by Crandall, Katkovsky, and Preston

(1962). They had developed a locus-of-control scale* which was designed for children. Unlike other locus-of-control scales, however, it encompassed only the dimension of locus-of-control in intellectual activities and was named the Intellectual-Achievement-Responsibility Scale. Using this scale as one of the predictors, she found a correlation coefficient of .70 between her Scale and a free play achievement behavior. Ss' achievement behavior, as specified by the author, varied from lackadaisical participation in intellectual activity to concerted efforts to meet self-imposed standards of excellence.

Franklin (1963) studied high school students involving a national stratified sample of 1,000, he hypothesized 17 different relationships between the I-E Scale and reported evidence of achievement motivation. The result was that, in general, there were significant correlations between internality of the individual and criteria of high achievement motivation. The criteria included such things as early attempts to investigate colleges, the expressed intention of going to college, the amount of time spent doing homework, a parent's interest in homework, etc. A significant relationship

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*There are at least seven versions of locus-of-control scale. All of them are based on Rotter's notion of locus-of-control as perceived by the individual.) Phares (1955) developed the first scale -- a "chance" versus "self-determinism" scale. James (1957) refined it. Liverant and Scodel (1960) constructed a 60-item test (1960) based on the original 100-item forced-choice questionnaire -- later reduced to 29 items, based on the results of item analysis (I-E Scale). While Phares and James' scale was more experimentally oriented, they expanded the contents of the scale to cover a wider span of locus-of-control situations in life. Bialer (1960) developed his own scale which was discussed previously. Most recently, Nowicki and Strickland (1970) published their Nowicki-Strickland Locus-of-Control Scale, which consists of 40 items. Their standardization procedures appear to be the best yet.

was found in the predicted direction in 15 out of his 17 relationships.

Also supporting the hypothesis that there is a high correlation between internality and striving for achievement is Butterfield's (1964) finding. He reported that the S who scored low on the Liverant-Scodel Scale of Locus of Control was more willing to settle for low academic grades, as asked at the beginning of the semester in an introductory course of psychology, than the S who scored high on the Scale. The result indicated that as the individual scores lower on a locus-of-control scale he shows less motivation to achieve in academic situations.

The results of a study by Rotter and Mulry (1965) supported the above findings. In a typical "skill" versus "chance" situation, 120 Ss were given an angle-matching task of extreme difficulty. The Ss were divided into groups based on the I-E Scale. The results indicated that "internals" took a significantly longer time to decide on a matching standard under "skill" conditions" than did "externals," but took a shorter time under "chance" conditions. The result suggests that the person with internal tendency regarded the skill situation as the one in which he could show achievement motivation.

Liverant and Scodel's (1960) is an appropriate report with which to conclude this section. Eight-five male students participated in a gambling situation in which each S was required to bet on the outcome of 30 separate tosses of a pair of dice. On each trial the S selected one of four amounts to bet on one of seven alternative outcomes with known objective probabilities. The results indicate that the "internals" chose significantly more intermediate and significantly fewer low-probability bets than the "exter-

nals." The "internals" never selected an extremely high- or low-probability bet, whereas the opposite was found to be true with the "externals." These findings strikingly resemble those reported by Atkinson and his associates. While the two groups of researchers have approached achievement motivation from different viewpoints, employing different techniques, it is of interest to note that they have reached precisely the same conclusion. That is, the individual with high achievement motivation or with an internal locus-of-control tends to take intermediate risks while the person with low achievement motivation or with an external locus-of-control tends to take extreme risks.

In summary, it may be concluded that, indeed, the expected relationship appears to persist between high motivation toward achievement as defined by McClelland and Atkinson and Rotter's notion of locus-of-control.

Studies of Achievement Motivation with Exceptional Children

A search for studies in which children with learning and behavior problems were used as subjects has been a vain endeavor. To the best of the writer's knowledge, there has not been a single study published on the achievement motivation of children with learning and behavior problems. Therefore, the following section will review that literature which has dealt mainly with mentally retarded children.

A pioneer work was reported by Jordan and DeCharms in 1959. They found, in a mixed group of normal and retarded children, that the normals had significantly greater achievement imagery than retardates from both regular and special education class programs. Tolman and Johnson (1958), compared achievement need in "familial" and "organic" types of mentally

defective children, and reported that organic-type children were less willing to compete than were "familial" children. The data also revealed that "organic" children were relatively more accepting of being rejected by a negative environment and this is evidenced by their diminished striving to achieve acceptance.

On the other hand, Zito and Bardon (1969) found that Negro adolescents who were enrolled in the regular school program -- whether normals or retardates -- were similar in hope-of-success imagery and fear-of-failure imagery. They found that achievement motivation was equally strong in Negro adolescents from the same socio-economic environment.

Butterfield and McIntyre (1969) tested the hypothesis that verbal punishment as it affects motivational variables would facilitate the concept "switching" among retardates. This specific punishment condition was designed to give the subjects more information than the general punishment condition about the precise way in which their performance at a card-sorting task was inadequate. They found that both of their punishment conditions resulted in more "switching" than did the control condition, supporting the hypothesis that motivational variables contribute to the concept-switching behavior of the mentally retarded.

Blackman and Kahn (1963) set up a 2 X 2 X 2 analysis of variance design to investigate the effects of sex, mental retardation, and success-failure experience on aspirational shifts. The task was to cross out as many letter "E's" as the subject could within 35 seconds, on a form of randomly distributed alphabetic characters. The results indicated that two groups of "normals" and "retardates" showed an increment in aspirational shift under the "success" condition and a decrement under the "failure" condition.

However, of three independent variables, only the "success-failure" dichotomy provided a statistically significant source of variation.

Miller (1961) posited that the "internals" would be more sensitive to cues which relate to their behavior effectiveness, while the "externals" would be more sensitive to cues which are irrelevant to the task itself, such as conventional punishments or rewards. Ninety retardates were divided into two groups consisting of 45 "internals" and 45 "externals" based on the scores of the Bialer-Cromwell locus-of-control scale. They were given a serial learning task with a criterion of two consecutive errorless trials under conditions of either success-climate, failure-climate, or neutral-climate. The "success-climate" group received pre-valued chips for each correct response in the task. The "failure-climate" group started with 100 chips each and one chip was removed for each incorrect response. The "neutral-climate" group neither received any chips nor were they penalized. The results showed that the performance was uniformly high among the "internals" under all three learning climates, and was also high in the "externals" under the "success-emphasis" learning condition. However, learning rate was markedly reduced in the "externals" with "failure" and "neutral" emphases. A significant interaction, as predicted, occured between locus-of-control and learning cimate. The results support Bialer's study (1961) that the reactions of the individual with external tendency, (i.e., external locus-of-control) were mainly due to a function of the "hedonistic feedback" he perceived in a situation. Miller assumed that the externally-controlled individual, being more hedonistic than the internally-controlled person, would pay more attention to cues in a task

situation which were hedonistically positive and hence, perform better. The hedonistically positive situation is normally found in a success-emphasizing situation. In a situation which was unpleasant or negative, the individual with external tendency would tend to show decreased performance on a distressing or threatening task.

To measure achievement motivation among the cultural-familial retardates, McMillan (1969) employed an interrupted-task paradigm. In this study subjects were interrupted on two tasks (manipulation of nine red and white Kohs blocks) before finishing. Then they were asked the reason why two of the designs were not completed. The tendency to place blame for the failure to complete the two designs was analyzed. He found that the retarded group placed blame on themselves. McMillan interpreted the finding as support for the position taken by Zigler (1967), that cultural-familial retardates have a higher expectancy of failure than do normal children.

Based on Atkinson's theory, Schwarz and Jens (1969) tested two hypotheses: (1) that "retardates," due to past failure experience, would be less motivated to put forth a maximal effort when tested in the presence of a peer group they felt to be of a higher level of intelligence than they conceived about themselves; and (2) that the "retardates" would work harder on a task described as non-intellectual because they could then conceive of the possibility of achieving success. Forty mentally retarded adolescents and forty normal subjects were given coding tests designed by the authors under two different conditions. The data analysis revealed that the first hypothesis was tenable, but the second hypothesis was rejected. The results indicated that previous failure experience by retardates had modified their perception of the task to lower their

achievement motivation, particularly in the presence of a peer group they thought intellectually superior to them.

Nielsen (1968) used the Children's Locus of Control Scale to examine the relationship of locus-of-control to probability learning in institutionalized and non-institutionalized mental retardates. He was primarily interested in investigating the assumptions that (1) externally controlled retardates would have more difficulty on the task of probability learning than the internally controlled; and (2) that institutionalized retardates would have more difficulty in making probability reversals than non-institutionalized retardates. The results demonstrated that mean probability matching performance varied as a function of locus-of-control. Externally controlled subjects, regardless of institutional or non-institutional placement, achieved a matching strategy on the original task, while internally controlled retardates were significantly below this performance level. The result was contrary to his expectation. Nielsen explained the outcome by assuming that mental retardates live in environments that are largely externally controlled. Therefore, the internally controlled individuals could not perceive the degree to which external control determined event-outcomes in their environments.

In summary, the scanty number of studies of achievement motivation with exceptional children has found that mentally retarded children are more failure-expecting and their achievement motivation is lower than normal children (McMillan, 1969 and Schwarz, 1969). On the other hand, Zito and Bardon (1969) study suggests that there is no difference in achievement motivation of Negro retarded and normal adolescents. Blackman and Kahn

(1963) supported the latter in that there was no difference in the reaction patterns between normal and retarded children under success-failure conditions. Two studies in which the Locus-of-Control Scale was used showed contradictory results in terms of prediction of behavior based on the LCS. While Nielsen's (1969) study indicates that the subjects high on the LCS scale showed lower performance in the matching strategy than the subjects low on the scale, Miller's (1961) investigation revealed that the performance was uniformly high among the "internals" under success, failure, and neutral conditions. However, the performance of "externals" was greatly reduced under failure and neutral conditions. In terms of these contradictory findings and lack of reports about achievement motivation of children with learning and behavior problems, it is apparent that there is a basic need to investigate the theme mentioned above.

Statement of Purpose

This study had two major purposes. The first was to investigate achievement motivation of children with learning and behavior problems in comparison with that of children in regular classrooms. In light of the lack of investigations related directly to this study and some empirical evidence in the area of mental retardation, it was assumed that the children with learning and behavior problems had failed to develop certain expectations that their actions would be followed by reinforcements, thus becoming more externally-controlled and less motivated to achieve. In comparison, children in regular classrooms expect that their acts will be

consistently reinforced, and thus become more internally-controlled. As the previous review of literature suggests, a difference in locus-of-control may be the major variable in determining achievement motivation. It might also be assumed that children in the special classes are not in a position to expect consistent reinforcements.

The second purpose was to examine the effects of various kinds of verbal instruction on performance tasks, and the relationship of such verbal instructions to achievement motivation. On the basis of the evidence presented from previous research (e.g., Bialer, 1960; Miller, 1961), it was anticipated that the performance of the child* high in achievement motivation would surpass that of the child*** low in achievement motivation when performing specified tasks. It was also anticipated that the performance of the LAM would be reduced under conditions of "failure" or when the task was a threatening one while performance would be increased in "success" and "neutral" atmospheres. These assumptions were based on Miller's (1961) finding that the LAM child -- being more hedonistic -- would better attend to cues in a task situation which was "hedonistically positive," and that he would attend less in a situation he perceived negatively. In the former circumstance, Miller posited that a situational high achievement motive was elicited. On the other hand, the HAM child, being less hedonistic, would pay more attention to cues inherent in tasks themselves. He would be more responsive to the effectiveness of his actions and his performance on tasks would not be as affected by favorable or adverse con-

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* The group of Ss which scored higher than the median on the LCS will, hereafter, be called the HAM (high achievement motivation) group.

** The group of Ss which scored lower than the median will be termed the LAM (low achievement motivation) group.

ditions as that of the LAM child.

Definition of Terms

The terms used in this study were operationally defined as follows:

Child with Learning and Behavior Problems. Children at five schools in the Eugene School District 4J who have been referred to the Experienced Teacher Fellowship Program at the University of Oregon because of their academic retardation and behavior problems.

Special Class Children. The special classes used in this study were comprised of forty-eight children randomly selected from classes from which the majority of special class children originated. These children were considered to be free from learning and behavior problems.

Child with High Achievement Motivation (HAM). Any child who scored above the median on the Bialer-Cromwell Locus-of-Control test.

Child with Low Achievement Motivation (LAM). Any child who scored below the median on the Bialer-Cromwell Locus-of-Control test.

Success-Neutral-Failure Experience. On the Coding Test, the child was told that, after practice, his performance was above average, average, or below average in comparison with other children. These fictitious performance reports were defined as "success," "neutral," or "failure" conditions, respectively.

General Hypotheses

The general research hypotheses are as follows:

1. There will be a significant difference in achievement motivation between Special Class children with learning and behavior problems and

children in regular classrooms, as measured on the Children's Locus-of-Control Scale.

2. Special Class children with high achievement motivation will perform significantly higher on three performance tasks than Special Class children with low achievement motivation.

3. Special Class children will obtain significantly different scores, given different types of verbal instruction on three performance tasks.

4. There will be significant interaction effects between achievement motivation and various verbal instructions given to Special Class children.

General hypotheses are broken down into ten specific research hypotheses* and statistical hypotheses* which were tested in four experimental conditions. Each corresponding research hypothesis and statistical hypothesis is paired and labeled "a" and "b".

Specific research hypotheses and statistical hypotheses in each of the four experiments are as follows.

I-a (Research Hypothesis)

The children in the regular classrooms will be more internally controlled (self-motivated) than the children in Special Classes with learning and behavior problems as measured on the Locus oF Control Scale.

I-b (Statistical Hypothesis)

There will be no significant difference in the mean scores on the Locus of Control Scale of children in regular classrooms and those in Special

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*These terms were employed based on Kirk's (1968) recommendation in his Experimental Design: Procedures for the Behavioral Sciences.

Classes.

II-a (Research Hypothesis)

Within the Special Class Group, the high achievement motivation group will perform significantly better under the conditions of three different forms of verbal instruction than do the low achievement motivation group on the Coding Test.

II-b (Statistical Hypothesis)

There will be no significant difference in the performance scores between the high achievement motivation group and the low achievement motivation group under the conditions of three different forms of verbal instruction on the Coding Test.

III-a (Research Hypothesis)

Within the Special Class group, both the high achievement motivation and the low achievement motivation group will perform significantly lower on the Coding Test when the examination is described as a "Reading Test" than when the examination is described as a "Motor-coordination Test," or as "Neutral."

III-b (Statistical Hypothesis)

Within the Special Class group, there will be no significant difference in performance for either the high achievement motivation group or the low achievement motivation group when the examination is described as a "Reading Test," a "Motor-coordination Test," or "Neutral."

IV-a (Research Hypothesis)

Within the Special Class group, there will be an interaction effect between the level of achievement motivation and different kinds of verbal instruction. It is specifically predicted that the low achievement motivation group will perform significantly lower under "Reading Test" instruction than when "Neutral" or "Motor-coordination Test" instructions are given, while the high achievement motivation group will perform uniformly under all three sets of conditions.

IV-b (Statistical Hypothesis)

With the Special Class group, there will be no significant interaction effect on the Coding Test between the level of achievement motivation and different kinds of verbal instruction.

V-a (Research Hypothesis)

Within the Special Class group, the high achievement motivation group will persist significantly longer on the NIM (Marienbad) game under the condition of three different kinds of verbal instruction than the low achievement motivation group.

V-b (Statistical Hypothesis)

Within the Special Class group, there will be no significant difference in persistence between the low achievement motivation group on the NIM game under the three different kinds of verbal instruction.

VI-a (Research Hypothesis)

Within the Special Class group, both the high achievement motivation group and the low achievement motivation group will persist significantly shorter period if the NIM game is described as an "Intelligence Test" than it will if the game is described as a "Motor-coordination Test" or "Neutral."

VI-b (Statistical Hypothesis)

Within the Special Class group, there will be no significant difference in the persistence of the high achievement motivation group and the low achievement motivation group under the three conditions in which the NIM game is described as an "Intelligence Test," and "Motor-coordination Test," or "Neutral."

VII-a (Research Hypothesis)

Within the Special Class group, there will be an interaction effect on the NIM game between the level of achievement motivation and different kinds of verbal instruction. It is specifically predicted that the low achievement motivation group will persist significantly longer under the "Motor-coordination Test" and "Neutral" conditions than it will under the "Intelligence Test" condition, whereas the high achievement motivation group will persist uniformly under all three conditions.

VII-b (Statistical Hypothesis)

Within the Special Class group, there will be no significant interaction effect on the NIM game between the level of achievement motivation and different kinds of verbal instruction.

VIII-a (Research Hypothesis)

Within the Special Class group, the high achievement motivation group will perform significantly better under "Success-Neutral-Failure" conditions on the Digit Symbol Test than the low achievement motivation group.

VIII-b (Statistical Hypothesis)

Within the Special Class group, there will be no significant difference in performance between the high achievement motivation group and the low achievement motivation group under "Success-Neutral-Failure" conditions on the Digit Symbol Test.

IX-a (Research Hypothesis)

Within the Special Class group, both the high achievement motivation group and the low achievement motivation group will perform significantly lower under the condition of "Failure" experience than they do under the conditions of "Neutral" and "Success" experience on the Digit Symbol Test.

IX-b (Statistical Hypothesis)

Within the Special Class group, there will be no significant difference in performance among both the high achievement motivation group and the low achievement motivation group under the conditions of "Success," "Neutral" and "Failure experience on the Digit Symbol Test.

X-a (Research Hypothesis)

Within the Special Class group, there will be no interaction effect on the Digit Symbol Test between the level of achievement motivation and

different kinds of success-failure experience. It is specifically predicted that the low achievement motivation group will perform significantly lower under the condition of "Failure" experience than it will under the conditions of "Neutral" and "Success" experience, whereas the high achievement motivation group will perform uniformly under the three conditions.

X-b (Statistical Hypothesis)

Within the Special Class group, there will be no interaction effect on the Digit Symbol Test between the level of achievement motivation and different kinds of success-failure experience.

CHAPTER II

METHOD

Subjects

The children in the Special Class Groups, originally consisting of 55 children, were referred to the Experienced Teacher Fellowship Program (ExTFP) because of learning and behavioral problems. The selection criteria for the Special Class Groups were: (1) that the child was either a third grader or fourth grader; (2) that he had manifested retardation in academic areas such as reading and mathematics, and/or had exhibited behavioral disorders to the extent that his behavior had disrupted either classroom activities or his own academic work; (3) that he had displayed no gross neurological defects; and (4) that he had not been diagnosed as a mentally retarded child according to standards prescribed by the Oregon State Department of Education.

The actual selection of the child was by a regular classroom teacher in conjunction with both the principal and counselor concerned at each of five participating schools. The elementary schools which cooperated with the ExTFP for the 1970-1971 academic year were Bailey Hill, Howard, Washington, Whiteaker, and Willakenzie schools. Although the total number of children in the Special Class Groups was originally 55 children, the number had been reduced to 48 by the time of this study. This was mainly due to moves to other schools. Of 48 Ss for this study, two Ss were replacements selected on the same criteria as the original 55 Ss.

Approximately five months after the ExTFP had started in October, 1970, the Wide Range Achievement Test (WRAT) (Jastak and Jastak, 1965) was administered to the Ss in conjunction with the ExTFP evaluation program. The test was administered by the writer. Another group of 48 children from regular classes at the five schools mentioned above was used as the contrast group for testing Hypothesis I only. These children were considered to be free from learning and behavioral problems. Major behavioral problems of teh children in the Special Classes were, as reported by regular class teachers: acting out, short attention spans, inadequate study skills, and inordinate dependency. Table I summarizes CA's of the Ss in the Special Classes and in the Regular Classes. Table II summarizes the results of the WRAT given to the Ss in the Special Class in February of 1971.

As is obvious in Table II, their major problems were in the areas of Reading and Spelling.

Instruments

Instruments used in this study were the "Children's Locus-of-Control Scale" (LCS) developed by Bialer and Cromwell (1960), the "Coding Test" and the "Digit Symbol Test" taken from the Wechsler Intelligence Scale for Children (WISC), and a match game called "NIM" or "Marienbad Game."

The Children's Locus-of-Control Scale (LCS)

The LCS was based on Rotter's social learning theory and was designed to measure the extent to which a child interprets both positive and negative

TABLE I

Chronological Age (Mo.) of the Ss in the Special Class and in Regular Classes

Group	N	Mean	Range
Special Class	48	108	96-132
Regular Class	48	106	90-136

TABLE II

Wide Range Achievement Scores
of the Ss in the Special Class

N	Statistic	Reading		Spelling		Arithmetic	
		Grade equivalent	Standard Score	Grade equivalent	Standard Score	Grade equivalent	Standard Score
48	range	1.9-4.8	69-107	1.5-3.7	71-99	1.8-4.5	78-104
	mean	2.9	88.7	2.5	84.1	3.2	90.5

outcomes as a result of his own actions (i.e., internally-controlled) rather than as due to fate, chance, or other people (i.e., externally-controlled). If the child scores high on this scale (meaning that he is largely internally controlled), then he has a high expectation that his acts will be followed by reinforcements. On the other hand, if the child scores low on this scale (demonstrating a predisposition toward external control) it indicates that he has a low expectancy that his acts will be followed by reinforcements.

The LCS consists of 23 items which are verbally administered and answered by a simple "yes" or "no." According to Miller (1960), the odd-even reliability of the Scale was .87. Total test reliability determined by Roulon's formula, was .94. Recently, Gozali and Bialer (1968) published a report in response to the criticism that the LCS has a high response-set bias (Lefcourt, 1960). Using the item-reversal technique with an N of 189 mentally retarded adolescents, they reported that the test-retest reliability over a one-week period was .84 and .67 between the original and reverse scales. Both correlation coefficients were significant beyond the .001 level.

The present author examined the test-retest reliability by administering the LCS to the Ss in the Special Class over a two-week period. The correlation coefficient obtained was .67, which was beyond the .001 level of significance. The LCS is provided in Appendix A.

NIM (Marienbad game)

This game was modeled upon the study by Lefcourt (1965). According to a Time Magazine (1962) article in which the game was described, the game originated in China around 3000 B.C., and was given the name "NIM"

by Harvard mathematician C. L. Boulton in 1901. The game uses 16 matches laid in 4 rows (7, 5, 3, 1), and two players take turns removing them. The rule of the game is that each player can take as few or as many as he wishes (even a whole row), but all matches must be taken from the same row on any given turn. The player who picks up the last remaining match loses the game. Although the NIM appears to be a game in which two players have equal chances to win, the outcome of the game can be controlled almost completely by memorizing a set of 18 combinations.

Coding Test and Digit Symbol Test*

These tests were borrowed from the Performance Test section of the Wechsler Intelligence Scale for Children. They were used unmodified, with the exception of time in the Coding Test. Although time is designated as 120 seconds on the WISC, it was limited to 60 seconds in this study. The decision was based on the writer's experiences in a preliminary study in which both tests were used. The full 120 second time period was used for the Digit Symbol Test. The Coding Test and the Digit Symbol Test are presented in Appendices C and D.

Procedure

The Children's Locus-of-Control Scale

The LCS was administered by the experimenter E to the Ss in both the Special Classes and the regular classes on a group basis. In order to

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*The Digit Symbol Test is termed as "Coding B" on the WISC. The Coding Test is called "Coding A" on the WISC.

avoid the problem of individual differences in reading, the E read all questions aloud. To obtain data from the Ss in regular classrooms, a class from which the majority of the Special Class Ss came was chosen in each of the five schools and the whole class was given the LCS. The total number of children who took the LCS in five schools was 102. Then, before scoring the collected LCS, the E chose at random a quantity of LCS results from the Contrast group corresponding to the number of Ss in the Special Classes at each of the five schools.

The test instructions for the LCS were as follows:

"This is not a test. I am trying to find out how kids your age think about certain things. I am going to ask you some questions to see how you feel about these things. There are no 'right' or 'wrong' answers to these questions. Some kids say 'yes' and some say 'no.' When I ask the question, if you think your answer should be 'yes,' or mostly 'yes,' write 'yes.' If you think the answer should be 'no,' or mostly 'no,' then put 'no.' Remember, different kids give different answers, and there is no 'right' or 'wrong' answer. Just say 'yes' or 'no' depending upon how you think the question should be answered. If you want me to repeat a question, just ask me. Do you understand? All right, listen carefully, and answer 'yes' or 'no.'"

Scoring procedure of the LCS is provided in Appendix A.

The Coding Test, the Digit Symbol Test, and the NIM game were given by the writer individually to the Ss in the Special Classes. The 48 Ss in the Special Classes were divided into two groups; one designated HAM and one designated as LAM. The HAM and LAM Ss were determined by dichotomizing

the distribution of raw scores on the LCS at the median scores. Each S in the HAM and LAM groups was then randomly assigned to one of three experimental conditions by use of a table of random numbers. The experiments were presented to the Ss in the order of the Coding Test, the Digit Symbol Test, and the NIM game. Within each experiment, the three different experimental conditions were again randomized to minimize the effects of the order of presentation. Table III summarizes this randomization. All Ss were tested individually in relatively distraction-free, small rooms in the schools.

Coding Test

The experimental instructions in the Coding Test under three different conditions were given before the S practiced coding. After a practice test the E checked whether the S understood the coding task.

The E's instructions to Ss as a "Reading Test" were as follows:

"This is a test that tells me how good you are in reading. Do you see a star here? Can you read what's in it? Now, I want you to fill in the things here with the same marks as they have at the top. OK, let's practice to see if you understand it. (After practice.) Now begin here and fill in as many squares as you can without skipping any. Keep working until I tell you to stop. Remember, I'd like to know how good you are in reading. Go ahead."

Under the condition termed "Neutral Instruction," the S was told:

"This is not a test. I'm just interested in this kind of data. All I want you to do is to copy these marks down here.

"OK. Let's practice. (After practice) Now begin here and fill in

TABLE III

Order of Presentation of Experimental Conditions
in Each Group of the HAM and the LAM Groups

Test	Group I	Group II	Group III
Coding Test	Reading Test instruction	Neutral instruction	Motor-coordination instruction
Digit Symbol Test	Below Average instruction	Average instruction	Above-Average instruction
NIM	Motor-coordination instruction	Neutral instruction	Intelligence Test instruction

as many squares as you can without skipping any. Keep working until I tell you to stop. Remember, I'm just interested in collecting this kind of information. Go ahead."

Under the conditions called "Motor-coordination Test" instruction, the following instruction was given:

"This is a test that tells how good you are in using your fingers. Now, I want you to fill in the things here with the same marks as they have at the top. As you see, you have to use your fingers well to do that. OK, let's practice to see if you understand it. (After practice) Now begin here and fill in as many squares as you can without skipping any. Keep working until I tell you to stop. Remember, I'd like to know how good you are in using your fingers."

The time limit was 60 seconds and one point was credited for each square filled correctly.

NIM (Marienbad game)

Sixteen matches were used in this experiment and laid out before the S as follows:

S

E

Under the condition called "Motor-coordination Test" the Ss were instructed thus:

"This is a test that tells me how good you are at using your fingers. You see, these matches are tiny. So, you have to be pretty good at using your fingers in order to handle such tiny pieces. OK, this is also a game and while we play a game I'd like to see how good you are at using your fingers. You can take as few or as many matches as you wish -- even a whole row. The one who picks up the last remaining match loses. OK? Why don't you start first? But, remember, I want to know how good you are at using you fingers."

Under the condition of "neutral" instruction the Ss were instructed in this way:

"This is called 'the match game.' Today, all I want you to do is to play the game with me. You can take as few or as many matches as you wish -- even a whole row. But all the matches you take must be taken from the same row. The player who picks up the last remaining match loses. OK? Why don't you start first?"

Under the condition called "Intelligence Test," the Ss were instructed thus:

"This is a new kind of IQ test. This test tells me how smart you are. It is also a game and while we play it I'd like to see how smart you are. OK? You can take as few or as many matches as you wish -- even a whole row. But all the matches you take must be from the same row. The one who picks up the last remaining match loses. OK? Why don't you start first? But, remember, I want to know how smart you are on this test."

Under all three sets of conditions, the S was told after the first play, "Now, it is up to you whether or not to continue. You can call it quits at any time." From the second play on, the S was asked each time if he wanted to continue.

The E, who had memorized a set of combinations, always beat the Ss. The Ss were allowed a maximum of 10 plays. This limit was not told to the Ss before the game. The dependent variable in this experiment was the number of games played despite constant defeats.

Digit Symbol Test

The Digit Symbol Test was given under three conditions. The "Below Average Performance," (failure experience) Ss were given the following instructions before practice:

"Now, you are going to do almost the same thing as you have just been doing except that there are marks printed under the numbers on this one. And this time I'm going to compare your results with those of other kids, to see what kind of job you have done after practice. I have a chart which tells me how well you have done compared with the others. Your job is to put the same mark under the same number. Now, let's practice for a minute."

After practice, the E checked performance and consulted with an irrelevant chart which contained many rows of numbers. He then gave the Ss the following information about their performance: "Well, that's disappointing. You didn't do too well. According to this chart, other kids do a much better job than you did. Now, begin here and fill in as many squares as you can without skipping any. Keep working until I tell you to stop. Go ahead."

In order not to inflict any possible psychological trauma on the Ss who were assigned to this condition, the E, after the task was over, again consulted the fake chart and told the Ss: "Gee, you did a good job this time. Nice work! Keep it up."

Under the condition termed "Average Performance" (neutral experience), the instruction given to the Ss before practice was the same as given for the Below Average group. The instruction given to the Ss after practice was as follows:

"Well, according to this chart, you didn't do too good, but not too bad. You did just like most other kids do. Now, begin here and fill in as many squares as you can without skipping any. Keep working until I tell you to stop. Go ahead."

Under the condition of "Above Average Performance" (success experience), the instruction given before practice was the same as that described under the condition of "Below Average Performance." After practice, the E, again consulted the fake chart and gave the instruction to the Ss as follows:

"Swell, you did a much better job than other kids. The other kids I have tested weren't able to do nearly as well!

The time allowed for the Digit Symbol Test was 120 seconds, and one point was credited to each square filled in correctly. These points constituted the dependent variable.

Before the tests were given, in all experiments the examiner asked the S if he had heard anything about the tests from an examinee who had previously taken the test. This was to insure against any possible contamination stemming from personal communications. The results indicated that

there was no reason to suspect any such contamination.

Analysis of the Data

The statistical method to test Hypothesis I-b was a t-test for two independent groups (one-tail test). Hypotheses II-b, III-b, IV-b, V-b, VI-b, VII-b, VIII-b, IX-b, and X-b, were tested with a two-way analysis of variance, fixed effects, model I (Hays, 1963). The level of significance to reject the null hypothesis was set at five per cent.

CHAPTER III

RESULTS

This chapter presents the findings in this study and evaluates the research and statistical hypotheses relating to these findings. The research and statistical hypotheses will be restated.

Hypotheses I-a and I-b

I-a: the children in the regular classrooms will be more internally controlled (self-motivated) than the children in Special Classes with learning and behavior problems as measured on the Locus of Control Scale.

I-b: there will be no significant difference in the mean scores on the Locus of Control Scale of children in regular classrooms and those in Special Classes.

The mean mean scores and standard deviations on the LCS are presented in Table IV. The data were analyzed by using a t-test for two independent samples. A t-ratio of .65 was obtained. The required t value to be significant at the .05 level for 46 degrees of freedom is 1.006 (a one-tail test). The analysis of data indicates that Hypothesis I-b is tenable. Thus, Research Hypothesis I-a, that the children in regular classrooms are more internally-controlled was not supported.

Furthermore, an F test was used to check the homogeneity of the two

TABLE IV

MEANS AND STANDARD DEVIATIONS OF SPECIAL CLASS GROUP AND CONTRAST GROUP ON THE CHILDREN'S LOCUS-OF-CONTROL SCALE

	N	Mean	SD
Special Class Group	48	13.05	2.82
Contrast Group	48	13.64	2.56

variances. A F value of 1.21 was obtained. The required F value to be significant at the .05 level for 50 and 50 degrees of freedom is 1.60. Hence, the null hypothesis with regard to the homogeneity of the two variances is retained, and further justified the use of the t-test for the two groups.

Hypotheses II-a and II-b

II-a: within the Special Class Group, the high achievement motivation group will perform significantly better under the conditions of three different forms of verbal instruction than do the low achievement motivation group on the Coding Test.

II-b: there will be no significant difference in the performance scores between the high achievement motivation group and the low achievement motivation group under the conditions of three different forms of verbal instruction on the Coding Test.

Cell means and a summary of two-way analysis of variance relating to Hypotheses II-a and II-b are presented in Tables V and VI. Table VI indicates that Hypothesis II-b was rejected beyond the .01 level of significance. For the hypothesis of no achievement motivation effect, an F of 7.27 for 1 and 42 degrees of freedom is required to reject at the 1 per cent level. The obtained F of 13.64 far exceeds this value. Thus, Research Hypothesis II-a, that the high achievement motivation group will perform significantly better under the conditions of three different forms of verbal instruction than do the low achievement motivation group on the Coding Test, is accepted.

TABLE V

CELL MEANS OF THE CODING TEST SCORES FOR THREE TYPES OF VERBAL INSTRUCTION AND HIGH AND LOW ACHIEVEMENT MOTIVATION

	Verbal Instruction		
	Reading Test	Neutral	Motor Coordination Test
HAM	32.25	31.75	32.50
LAM	25.88	25.00	25.00

TABLE VI

TWO-WAY ANALYSIS OF VARIANCE OF THE CODING TEST SCORES FOR THREE TYPES OF VERBAL INSTRUCTION AND HIGH AND LOW ACHIEVEMENT MOTIVATION

Source	SS	df	MS	F
Achievement Motivation (A)	567.19	1	567.19	13.65**(1)
Instruction (B)	3.79	2	1.90	.05(NS)(2)
Interaction (A) X (B)	2.62	2	1.31	.03(NS)(3)
Error	1745.88	42	41.56	
Total	2319.48	47		

(1)** P < .01: necessary F for df 1/42 = 7.27

(2) P > .05: necessary F for df 2/42 = 3.22

(3) P > .05: necessary F for df 2/42 = 3.22

Hypotheses III-a and III-b

III-a: within the Special Class group, both the high achievement motivation and the low achievement group will perform significantly lower on the Coding Test when the examination is described as a "Reading Test" than when the examination is described as a "Motor-coordination Test," or as "Neutral."

III-b: within the Special Class group, there will be no significant difference in performance for either the high achievement motivation group or the low achievement motivation group when the examination is described as a "Reading Test," a "Motor-coordination Test," or "Neutral."

Cell means and a summary of two-way analysis of variance relating to Hypotheses III-a and III-b are presented in Tables V and VI. An F of .05 was obtained, which is far below the required F value of 3.22 to be significant at the .05 level. Hence, Hypothesis III-b was accepted and the corresponding Research Hypothesis that the "Reading Test" instruction would lower the performance of both the high achievement motivation group and the low achievement motivation group was rejected.

Hypotheses IV-a and IV-b

IV-a: within the Special Class group, there will be an interaction effect between the level of achievement motivation and different kinds of verbal instruction. It is specifically predicted that the low achievement motivation group will perform significantly lower under "Reading Test" instruction than when "Neutral" or

"Motor-coordination Test" instructions are given, while the high achievement motivation group will perform uniformly under all three sets of conditions.

IV-b: within the Special Class group, there will be no significant interaction effect on the Coding Test between the level of achievement motivation and different kinds of verbal instruction.

Cell means and a summary of two-way analysis of variance in relation to Hypotheses IV-a and IV-b are presented in Tables V and VI. An F value of .03 was obtained. This was far below the required value of 3.22 to be significant for 2 and 42 degrees of freedom at the .05 level. Statistical Hypothesis IV-b is retained and Research Hypothesis IV-a, that the low achievement motivation group would perform significantly lower under "Reading Test" instruction than when "Neutral," or "Motor-coordination Test" instructions are given, while the high achievement motivation group would perform uniformly under all three sets of conditions, was rejected.

Hypotheses V-a and V-b

V-a: within the Special Class group, the high achievement motivation group will persist significantly longer on the NIM (Marienbad) game under the condition of three different kinds of verbal instruction than the low achievement motivation group.

V-b: within the Special Class group, there will be no significant difference in persistence between the low achievement motivation group on the NIM game under the three different kinds of verbal instruction.

Cell means and a summary of two-way analysis of variance in reference to Hypotheses V-a and V-b are shown in Tables VII and VIII. The F value obtained was .08, which is far below the required F of 4.07 for 1 and 42 degrees of freedom to be significant at the .05 level. Thus, Hypothesis V-b was accepted. No support was found for Research Hypothesis V-a, that the high achievement motivation group on the NIM game would persist significantly longer under three different kinds of verbal instruction than the low achievement motivation group.

Hypotheses VI-a and VI-b

VI-a: within the Special Class group, both the high achievement motivation group and the low achievement motivation group will persist significantly shorter period if the NIM game is described as an "Intelligence Test" than it will if the game is described as a "Motor-coordination Test" or "Neutral".

VI-b: within the Special Class group, there will be no significant difference in the persistence of the high achievement motivation group and the low achievement motivation group under the three conditions in which the NIM game is described as an "Intelligence Test," and "Motor-coordination Test," or "Neutral".

Cell means and a summary of two-way analysis of variance relating to Hypotheses VI-a and VI-b are presented in Tables VII and VIII. The obtained F value of 2.63 did not attain the required F of 3.22 for 2 and 42 degrees of freedom for significance at the .05 level. Thus, Hypothesis VI-b was accepted and Research Hypothesis VI-a, that "Intelligence Test"

instruction would lower task persistence of both the high achievement motivation group and the low achievement motivation group on the NIM game, was not supported.

Hypotheses VII-a and VII-b

VII-a: within the Special Class group, there will be an interaction effect on the NIM game between the level of achievement motivation and different kinds of verbal instruction. It is specifically predicted that the low achievement motivation group will persist significantly longer under the "Motor-coordination Test" and "Neutral" conditions than it will under the "Intelligence Test" condition, whereas the high achievement motivation group will persist uniformly under all three conditions.

VII-b: within the Special Class group, there will be no significant interaction effect on the NIM game between the level of achievement motivation and different kinds of verbal instruction.

Tables VII and VIII show cell means and a summary of two-way analysis of variance. The obtained F value of .51 was far below the required F of 3.22 to be significant at the .05 level for 2 and 42 degrees of freedom. Hence, Hypothesis VII-b was accepted and Research Hypothesis VII-a, that the low achievement motivation group would persist significantly longer under "Neutral" and "Motor-coordination Test" instructions than when the NIM game was described as an "Intelligence Test," whereas the high achievement motivation group would persist uniformly under all three conditions was rejected.

TABLE VII

CELL MEANS OF THE NIM GAME SCORES FOR THREE TYPES OF VERBAL INSTRUCTIONS AND HIGH AND LOW ACHIEVEMENT MOTIVATION

	Verbal Instruction		
	Motor-coordination Test	Neutral	Intelligence Test
HAM	7.00	7.00	5.75
LAM	6.63	6.88	5.00

TABLE VIII

TWO-WAY ANALYSIS OF VARIANCE OF THE NIM GAME SCORES FOR THREE TYPES OF VERBAL INSTRUCTION AND HIGH AND LOW ACHIEVEMENT MOTIVATION

Source	SS	df	MS	F
Achievement Motivation (A)	.71	1	.71	.08(NS)(1)
Instruction (B)	42.87	2	21.44	2.63(NS)(2)
Interaction (A) X (B)	8.32	2	4.16	.51(NS)(3)
Error	342.00	42	8.14	
Total	393.90	47		

(1) $p > .05$: necessary F for df 1/42 = 4.07

(2) $p > .05$: necessary F for df 2/42 = 3.22

(3) $p > .05$: necessary F for df 2/42 = 3.22

Hypotheses VIII-a and VIII-b

VIII-a: within the Special Class group, the high achievement motivation group will perform significantly better under "Success-Neutral-Failure" conditions on the Digit Symbol Test than the low achievement motivation group.

VIII-b: within the Special Class group, there will be no significant difference in performance between the high achievement motivation group and the low achievement motivation group under "Success-Neutral-Failure" conditions on the Digit Symbol Test.

Cell means and a summary of two-way analysis of variance are presented in Tables IX and X. An F of 3.05 was obtained. Hypothesis VIII-b was accepted, since the required F for 1 and 42 degrees of freedom to be significant at the .05 level is 4.07. Research Hypothesis VIII-a, which predicted that the high achievement motivation group would perform significantly better than the low achievement motivation group under "Success-Neutral-Failure" conditions on the Digit Symbol Test was not accepted.

Hypotheses IX-a and IX-b

IX-a: within the Special Class group, both the high achievement motivation group and the low achievement motivation group will perform significantly lower under the condition of "Failure" experience than they do under the conditions of "Neutral" and "Success" experience on the Digit Symbol Test.

IX-b: within the Special Class group, there will be no significant difference in performance among both the high achievement

motivation group and the low achievement motivation group under the conditions of "Success," "Neutral," and "Failure" experience on the Digit Symbol Test.

The results are shown in Tables IX and X. An F value of .76 was obtained. The required F for 2 and 42 degrees of freedom to be significant at the .05 level is 3.22. Therefore, Statistical Hypothesis IX-b was accepted. Hypothesis IX-a, which predicted that both the high achievement motivation group and the low achievement motivation group would perform significantly lower under the condition of "Failure" experience than they would under the conditions of "Neutral" and "Success" experience on the Digit Symbol Test was not supported.

Hypotheses X-a and X-b

X-a: within the Special Class group, there will be an interaction effect on the Digit Symbol Test between the level of achievement motivation and different kinds of success-failure experience. It is specifically predicted that the low achievement motivation group will perform significantly lower under the condition of "Failure" experience than it will under the conditions of "Neutral" and "Success" experience, whereas the high achievement motivation group will perform uniformly under the three conditions.

X-b: within the Special Class group, there will be no interaction effect on the Digit Symbol Test between the level of achievement motivation and different kinds of success-failure experience.

The results are presented in Tables IX and X. The F obtained in this experiment was 3.47. An F of 3.22 was required for 2 and 42 degrees of freedom to be significant at the .05 level. Statistical Hypothesis X-b was rejected and Research Hypothesis X-a was supported. Hypothesis X-a predicted that the low achievement motivation group would perform significantly lower under the condition of "Failure" experience than they would under the conditions of "Neutral" and "Success" experience, whereas the high achievement motivation group would perform at a uniform level under the three conditions.

In order to check the effects of three different types of verbal instruction within the low achievement motivation group, one way analysis of variance was used with the scores on the Digit Symbol Test. The result is summarized in Table XI. Analysis of data reveals that the obtained value of 2.75 did not reach the required F value of 3.47 for significance at the .05 level. Furthermore, on the basis of post-hoc analysis, three separate t-tests were used to examine the differences in mean scores on the Digit Symbol Test between the high achievement motivation group and the low achievement motivation group under the conditions of "Success-Neutral-Failure" experiences. The results are shown in Table XII. A t-test applied to the mean scores of the high achievement motivation group and the low achievement motivation group under the condition of "Failure" experience yielded the t-ratio of 2.73 which was significant at the .01 level. The required t for 14 degrees of freedom to be significant at the .01 level is 1.49. The other 5-ratios obtained were .54 and .11, respectively, under the conditions of "Neutral" "Success" experience. Neither attained the t

TABLE IX

CELL MEANS OF THE DIGIT SYMBOL TEST CORES FOR THREE TYPES OF VERBAL INSTR CTION AND HIGH AND LOW ACHIEVEMENT MOTIVATION

	Verbal Instruction		
	Below Average	Average	Above Average
HAM	36.53	32.37	33.50
LAM	24.50	29.88	34.00

TABLE X

TWO-WAY ANALYSIS OF VARIANCE OF THE DIGIT-SYMBOL TEST SCORES FOR THREE TYPES OF VERBAL INSTRUCTION AND HIGH AND LOW ACHIEVEMENT MOTIVATION

Source	SS	df	MS	F
Achievement Motivation (A)	229.68	1	229.68	3.05(NS) (1)
Instruction (B)	115.29	2	57.64	.76(NS) (2)
Interaction (A) X (B)	521.96	2	260.98	3.47 * (3)
Error	3162.63	42	75.30	
Total	4029.56	47		

(1) $p < .05$: necessary F for df 1/42 = 4.07

(2) $p > .05$: necessary F for df 2/42 = 3.22

(3) * $p > .05$: necessary F for df 2/42 = 3.22

value of 1.07, which is necessary to be significant at the .05 level for 14 degrees of freedom.

The post-hoc analysis described above would suggest that while the performance of the low achievement motivation group on the Digit Symbol Test under "Success-Neutral-Failure" conditions did not differ from each other significantly, the main source of interaction originated from the difference in performance under "Failure" condition between the high achievement motivation group and the low achievement motivation group. That is, while the high achievement motivation group, as predicted, performed at a uniform level under three conditions, the performance of the low achievement motivation group was considerably depressed under the condition of "Failure" experience.

To summarize, the results of data analysis indicate that there is no significant difference in achievement motivation, as measured on the Children's Locus of Control Scale, between Special Class children and those in regular classrooms.

The data from the three experiments with Special Class children suggest that on the Coding Test, the performance of the high achievement group far exceeds that of the low achievement motivation group, as predicted. However, neither the effects of verbal instruction on performance nor an interaction effect between the level of achievement motivation and different kinds of verbal instruction was observed.

The data from the NIM game indicate that there was no significant difference in persistence between the high achievement motivation group and the low achievement motivation group. The predicted interaction

interaction effect between the level of achievement motivation and verbal instructions on persistence on the NIM game were not strong enough to support the predicted hypothesis.

On the Digit Symbol Test, there was an interaction effect between the level of achievement motivation and success-failure experience. The "Failure" experience of the low achievement motivation group lowered the performance of the group considerably, while the same experience did not create adverse effects in the high achievement motivation group. The prediction that the high achievement motivation group would perform significantly better than the low achievement motivation group under "Success-Neutral-Failure" conditions could not be supported. However, the obtained F value suggests that the result was in the predicted direction. The data analysis also revealed that "Success-Neutral-Failure" experience did not affect the performance of either the high achievement motivation group or the low achievement motivation group.

TABLE XI

ONE-WAY ANALYSIS OF VARIANCE OF THE DIGIT-SYMBOL TEST SCORES FOR THREE TYPES OF VERBAL INSTRUCTION AMONG THE LAM GROUP

Source	SS	df	MS	F
Instruction	363.08	2	181.54	2.76(NS)(1)
Error	1380.88	21	65.76	
Total	1743.96	23		

(1) $p > .05$: necessary F for df 2/21 = 3.47

TABLE XII

T-RATIOS APPLIED TO THE MEAN SCORES ON THE DIGIT SYMBOL TEST BETWEEN THE LAM GROUP AND THE HAM GROUP UNDER THE CONDITIONS OF "SUCCESS-NEUTRAL-FAILURE" EXPERIENCE

	Failure Experience	Neutral Experience	Success Experience
t	2.73**(1)	.54 (2)	.11 (3)

(1) ** $t < .01$: necessary t for df 14 = 1.49 (one-tail test)

(2) $t > .05$: necessary t for df 14 = 1.07 (one-tail test_

(3) $t > .05$: necessary t for df 14 = 1.07 (one-tail test)

CHAPTER IV

DISCUSSION

Comparison of Achievement Motivation of Children with Learning and Behavior Problems with that of Children in Regular Classrooms.

Research Hypothesis I-a predicted that achievement motivation of Special Class children (as operationally measured on the Locus-of-Control Scale) would be significantly lower than that of children in regular classrooms. The result showed that there was no significant difference in the level of achievement motivation between the two groups.

The above finding indicates that, contrary to the prediction, the achievement motivation of the children in the Special Classes as measured on the Locus-of-Control Scale in this study was indeed not significantly different from that of children in regular classrooms. Both groups appeared to believe that their acts would be followed by positive or negative reinforcements. Although it is a commonly accepted assumption among classroom teachers that children in Special Classes show academic retardation mainly because of low achievement motivation, the present study suggests that for some children, at least, the possibility that lack of achievement motivation is the main source of their learning problems may be ruled out.

However, for several reasons, the above conclusion should be made with reservations. For one thing, the reliability coefficient of the instrument used was not as high as it was originally hoped. Gozali and Bialer (1968) reported a coefficient of .84 with mentally retarded sub-

jects over a one-week period. But, a check by the writer on the reliability of the instrument with the children used in this study revealed a coefficient of .67 over a two-week period.

For another, there is a possibility that, as Feather (1967a, 1967b) hypothesized in his more recent articles, locus-of-control is more situational and subject to changes depending upon the situation in which the subject is placed. Unlike Rotter's original hypothesis, Feather emphasizes the changeable nature of locus-of-control. Although it is necessary to test further the hypotheses advanced by Feather, his arguments have some merit in interpreting the results of this study. In view of the fact that the children in Special Classes had manifest learning problems and teachers' "hunch" that the children lacked achievement motivation, it may be possible to infer that the children showed "differential" locus-of-control in responding to the Locus-of-Control Scale. That is, the children in Special Classes perceived the academic situations as external and not consistent in terms of providing reinforcements, whereas the children are internally controlled in general life situations. If this hypothesis is supported in further research, this may in part account for the finding that there was no significant difference in achievement motivation as measured on the Locus-of-Control Scale between the two groups, because the Scale is designed to measure locus-of-control of children in general life situations. All in all, the above discussion needs further research before definite conclusions are made.

The Effects of Various Types of Verbal Instruction on Performance Tasks and the Relationships of Such Verbal Instruction to Achievement Motivation

Based on Cromwell's postulates and Bialer (1961) and Miller's (1962) findings, it was hypothesized in general that, within a Special-Class group, 1) the HAM group will perform significantly higher on three performance tasks than the LAM group, 2) Special-Class children will obtain significantly different scores, given different types of verbal instruction on three performance tasks, and 3) there will be significant interaction effects between achievement motivation and various verbal instruction.

The Coding Test

On the Coding Test, Research Hypothesis II-a predicted that the HAM group would perform significantly better under the conditions of three different verbal instructions than would the LAM group. This hypothesis was supported at the .01 level of significance. Research Hypothesis III-a predicted that the "Reading Test" instruction would depress the performance of both groups more than would either of the other two instructions. Research Hypothesis IV-a stated that the LAM group would perform significantly lower under the condition of "Reading Test" instruction, while the HAM group would perform uniformly under all three conditions of verbal instruction. These two hypotheses were rejected.

The result of Research II-a is consistent with Miller's finding. It indicates that within the Special Class group the children who scored higher on the Locus-of-Control Scale worked harder on the Coding Test than the children who scored lower.

Research Hypotheses III-a and IV-a were rejected. While it was comparatively easy to lead the children to believe that the Coding Test

was a "Motor-coordination Test" or for "data collection", it may have been more difficult to lead them to believe that it was a "Reading Test". This may have been due to the structure of the test, i.e., the test did not contain any familiar elements of reading.

Secondly, the verbal instructions the examiner adopted may not have been strong enough to create different effects on performance tasks. In addition, no attempt was made to check on whether the child really believed the instructions he had received prior to the experiment.

A third reason might be that the verbal instructions, in general, are not strong enough to create situational locus-of-control, i.e., lowering or raising the level of achievement motivation in relation to hope of success or fear of failure. This contention may be bolstered when compared with the results obtained on the Digit Symbol Test in the later experiment in which the child has experienced success or failure.

The NIM Game

For this game, it was predicted (in Research Hypothesis V-a) that the HAM group would persist longer than the LAM group under all three verbal conditions. Research Hypothesis VI-a stated that both groups should give up significantly more quickly when instructed that their task was an "Intelligence Test". Research Hypothesis VII-a predicted that there would be an interaction effect between achievement motivation and verbal instruction. All of these hypotheses were rejected.

Although Lefcourt (1965) used the NIM game successfully as a dependent variable, the Game itself appears to possess qualities which are too varied to be used as a measure of achievement motivation. Feather

(1962) states that persistence can be used as a measure of achievement motivation as well as a measure of traits underlying behavior. When using this game as a msasure of achievement motivation, particularly with children, it may have been that persistence in the game was decided not only by achievement motivation of the child but also by such sundry variables as sex, aggressiveness, experience with a similar game, and the child's perception of the game as an opportunity to escape from study situations. To check the influence of the first variable, sex, a t-test was used to examine the difference in persistence between boys and girls. The means were 7.0 and 4.7 for boys and girls, with variances of 4.6 and 6.8, respectively for 36 boys and 12 girls. The attained value of 2.86 was significant at the .01 level. Thus, it can be concluded that, at least, boys liked this game better than did girls. This was an unexpected finding and would indicate that in the future more caution should be used when the NIM game is employed as a measure of achievement motivation.

The Digit-Symbol Test

It was predicted (in Research Hypothesis VIII-a) that the HAM group would perform significantly better than the LAM group under all three types of success-failure conditions on the Digit-Symbol Test. Research Hypothesis IX-a stated that both the HAM and the LAM groups would perform significantly lower under the "Failure" condition. Research X-a predicted an interaction effect, in that while the HAM group might perform evenly under the three conditions, the performance of the LAM group would be depressed significantly less than would be the case under the other two conditions.

The results show that Hypothesis X-a was supported at the .05 level, while Hypotheses VIII-a and IX-a were rejected.

No column effect was found, i.e., the success-neutral-failure experience did not produce any significant differences in either the HAM or the LAM group. This may be attirubted to the relatively "weak" presentation of verbal instructions. For example, Willcutt and Kennedy (1963), in a similar experiment emphasizing success-failure conditions, used strong wording. Under the "failure" condition, the examiner said:

> "Well, that's it. (pause) Hmmmmmm...I really am disappointed. I think these are the worst scores I have gotten yet..."

Under the success condition, the E said:

> "I knew you would do well but you did even better than I had expected....These look like the best scores I have gotten yet..."

In contrast, the verbal instructions employed by the present examiner were weaker, because of a concern for possible psychological traumas.

The most interesting finding on this test was a clear-cut interaction effect between the level of achievement motivation and the verbal instructions. Although one-way analysis of instruction in the LAM group did not yield a significant difference, a t-test showed that the performance of the LAM group under the "failure" condition was more greatly reduced than was the HAM performance ($t = 2.73$, $p < .01$). Two other t-tests used to examine the differences in the mean scores, for performance under the "Neutral" and the "Success" conditions, between the LAM and the HAM groups, did not reveal significant differences at the .05 level.

Implications for Education

The results of this study have several implications for education, especially for teachers working with children who have learning and behavior problems.

First, contrary to the common notion that these children possess little motivation to achieve, this study has presented data indicating that such a conclusion is at least questionable. So far as the LCS scores are concerned, the results suggest that Special Class children feel as responsible for their acts as children in regular classrooms. Just as many of one group as the other believe that their acts will be followed by reinforcements in a broad spectrum of life situations. And yet these "special" children are considered to be "failures" in intellectual-academic situations and have developed negative self-concepts. The data from the Coding Test clearly indicate that, among Special Class children, the child high in achievement motivation does have the potential to achieve more than the external locus-of-control child who is low in achievement motivation. Thus the first step recommended, based on the results of this study, is to identify the child who is internally-oriented by a test such as the Locus-of-Control Scale. Once the child is so identified, he can be dealt with educationally more efficiently and more economically in terms of manpower. This will offer more of an opportunity to work with the child low in achievement motivation; and quite possibly to alter his motivational level -- particularly in academic situations. Thus, a corollary of this finding would be the changing of the educational environment so as to allow more control by the teacher who would change

a child's perception of how his behavior affects his environment.

The second implication for educating children with learning and behavior problems is shown in the results of the Digit-Symbol Test. As predicted, the performance of the LAM group was markedly reduced given the "failure" instructions, while it was increased when the instructions fabricated a "success" condition. It is quite clear that Special Class children -- those with low achievement motivation in particular -- are affected by success-failure experience sets.

A similar effect was already demonstrated 46 years ago in a classic study by Hurlock (1925). Of three experimental groups which experienced "praise", "reproof", and "ignorance", respectively, an overall benefit of significance was shown in giving "praise" for performance in practicing addition. Similar effects were reported by Chose (1931) in strength-of-grip tests; in card discrimination tasks by Kennedy, Turner and Lindner (1962); and with lower- and mildle-class fourth grade students of low, medium, and superior intelligence by Kennedy and Willcutt (1963). Interestingly enough, Willcutt and Kennedy's study found the same effects demonstrated as in the present investigation; i.e., different verbal instructions did not produce marked performance differences among children of high intelligence (a mean WAIS IQ of 138). However, their major concern had been the effect of intelligence on performance.

While none of the above-mentioned studies has approached the problem from the standpoint of achievement motivation, the present study would indicate that the performance of the LAM child on a performance task is readily affected by success or failure conditions than is the HAM child.

Limitations of the Present Investigation and Implications for Future Research

There are several limitations in this study which suggest the need for future research. First, the sample obtained from five schools in the Eugene 4J School District is not a representative sample of children with learning and behavior problems. Indeed, it appears that even in the sample used, there were differences from school to school, dependent on variations in socio-economic status. One school drew children from the lower socio-economic level, while parents of children in two other schools are much higher on the socio-economic scale. Thus no claim is made that the characteristics of the children in this study are the parameters of children in general.

To describe objectively the characteristics of the children in the Special Class, the author mainly relied on the Wide Range Achievement Test (WRAT), which was administered in conjunction with the evaluation program of the Experienced Teacher Fellowship Program. Although the WRAT is one of the most widely used achievement tests, experts agree that the test has a narrow scope -- measuring primarily achievement in reading and mathematics. In addition, Jastak and Jastak (1965) have not reported reliability coefficients confirmed by the test-retest method.

The same criticism will be aimed at the Bialer-Cromwell Children's Locus-of-Control Scale, although this Scale has never been intended for commercial use. The original scale lacks any careful examination for reliability. Nowicki-Strickland's* Children's Locus-of-Control Scale, which

*The author obtained the unpublished manuscript of the Nowicki-Strickland Children's Locus-of-Control Scale through the courtesy of Elizabeth "Kay" Porter and Irene Mazer, both of whom are in the Department of Educational Psychology at the University of Oregon.

is still unpublished, appears to be more promising. (It is constructed more carefully and the test-retest reliabilities for a six-week period were .67 for the eight-to-eleven-year-old group (N=98) and .75 for those in the twelve-to-fifteen-year-old group (N=54). However, in all fairness, it should be pointed out that the Nowicki-Strickland Scale does not limit its locus-of-control to academic-intelligence situations.

As mentioned in the preceeding section, the use of the NIM game as a measure of achievement motivation should await more thorough investigation. At the present time, despite Lefcourt's successful attempt, it is not certain that achievement motivation is the major variable determining persistence at the game.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to investigate achievement motivation of children with learning and behavior problems, as well as to examine the effects of various types of verbal instruction on performance tasks and the relationship of such verbal instructions to achievement motivation.

Based on the previous findings by Miller (1961), and Cromwell's (1963) postulate, it was hypothesized in general that: 1) there will be a significant difference in achievement motivation between Special Class children (with learning and behavior problems) and children in regular classrooms, as measured on the Children's Locus-of-Control Scale; 2) Special Class children with high achievement motivation will perform significantly higher on three performance tasks than Special Class children with low achievement motivation; 3) Special Class children will obtain significantly different scores with different types of verbal instruction on three performance tasks; and 4) there will be significant interaction effects between achievement motivation and various verbal instructions given to Special Class children. These general hypotheses were further broken down into 10 hypotheses in four experiments, which were stated in both prediction and null forms. The "level of achievement motivation" was operationally defined as the scores the S made on the Locus-of-Control Scale.

Method

Subjects: The Experimental Subjects were 48 third- and fourth-grade children from Eugene School District 4J who were referred to the Experienced Teacher Fellowship Program because of learning and/or behavior problems. Another group of 48 children from regular classes was used as the Contrast group.

Instruments: Bialer-Cromwell's Children's Locus-of-Control Scale (LSC); the Coding Test and Digit-Symbol Test taken from the Wechsler Intelligence Scale for Children, and the NIM ("Marienbad") game.

Procedure: The LCS was administered to Experimental and Contrast groups as a group test. The Coding Test, the Digit-Symbol Test, and the NIM were each given individually as performance tests to the Ss in the Special Class. The 48 Ss were then divided into high and low achievement motivation groups, based on their scores on the LCS. Ss in each group were then randomly assigned to three experimental conditions, in each of three experiments. For the Coding Test, children in one group were told that the test was to examine their reading ability; in the second group they were told that the test was to examine their motor-coordination ability; and children in the third group were told that the task was for the examiner's information only. Concerning the NIM, children in each of three groups were told that the NIM was, respectively, an intelligence test, a motor-coordination test, or simply a game. For the Digit-Symbol Test, children in each of three groups were told that, after practice, their performance was "above average", "average", or "below average".

Results

The data, analyzed by a t-test and two-way analysis of variance (fixed effects, model I, Hayes, 1963) produced the following findings:

1. There was no significant difference between the Experimental group and the Contrast group in LCS scores.

2. On the Coding Test, the performance of the HAM group, as predicted, was significantly higher at the .01 level than that of the LAM group. Neither an interaction effect nor any consequence of verbal instructions was found.

3. On the NIM game, none of the predictions, with regard to the effects of verbal instructions, level of achievement motivation, or interaction between them, was confirmed at the .05 level. However, there was a slight trend in the predicted direction in the effect of verbal instructions.

4. On the Digit-Symbol Test, the prediction in regard to the effects of verbal instructions was rejected, since the F value did not reach unity. The research hypothesis concerning an interaction effect between the level of achievement motivation and success-failure experience was confirmed at the .05 level.

Conclusions

Based on the results of this investigation, the following conclusions seem justified:

1. The level of achievement motivation of children with learning and behavior problems, as measured on the LCS, is not different from that of children in regular classrooms.

2. Within the Experimental group, the Ss high in achievement motivation tended to perform better on given tasks than the Ss low in achievement motivation, regardless of differences in verbal instructions.

3. The performance of the Ss low in achievement motivation tended to be reduced under "failure" conditions and increased under "success" conditions, while the HAM group performed uniformly under all conditions. The results are generally consistent with the Miller findings.

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APPENDICES

A. Bialer-Cromwell Children's Locus of Control Scale

B. Coding Test

C. Digit Symbol Test

APPENDIX A

BIALER-CROMWELL

CHILDREN'S LOCUS OF CONTROL SCALE

Locus of Control Scale Instructions and Items

This is not a test. I am trying to find out how kids your age think about certain things. I am going to ask you some questions to see how you feel about these things. There are no right or wrong answers to these questions. Some kids say "yes" and some say "no". When I ask the question, if you think your answer should be yes, or mostly yes, say "yes". If you think the answer should be no, or mostly no, say "no". Remember, different kids give different answers, and there is no right or wrong answer. Just say "yes" or "no" depending upon how you think the question should be answered. If you want me to repeat a question just ask me. Do you understand? All right, listen carefully, and answer "yes" or "no".

1p. When somebody gets mad at you, do you usually feel there is nothing you can do about it?

2f. Do you really believe a kid can be whatever he wants to be?

3f. When people are mean to you, could it be because you did something to make them mean?

4f. Do you usually make up your mind about something without asking someone first?

5f. Can you do anything about what is going to happen tomorrow?

6f. When people are good to you, is it usually because you did something to make them be good?

7f. Can you ever make other people do things you want them to do?

8f. Do you ever think that kids your age can change things that are happening in the world?

9f. If another kid was going to hit you, could you do anything about it?

10f. Can a kid your age ever have his own way?

11p. Is it hard for you to know why some people do certain things?

12f. When someone is nice to you, is it because you did the right things?

13f. Can you ever try to be friends with another kid even if he doesn't want to?

14f. Does it ever help any to think about what you will be when you grow up?

15f. When someone gets mad at you, can you usually do something to make him your friend again?

16f. Can kids your age ever have anything to say about where they are going to live?

17f. When you get into an argument, is it sometimes your fault?

18p. When nice things happen to you, is it only good luck?

19p. Do you often feel you get punished when you don't deserve it?

20f. Will people usually do things for you if you ask them?

21f. Do you believe a kid can be whatever he wants to be when he grows up?

22p. When bad things happen to you, is it usually someone else's fault?

23f. Can you ever know for sure why some people do certain things?

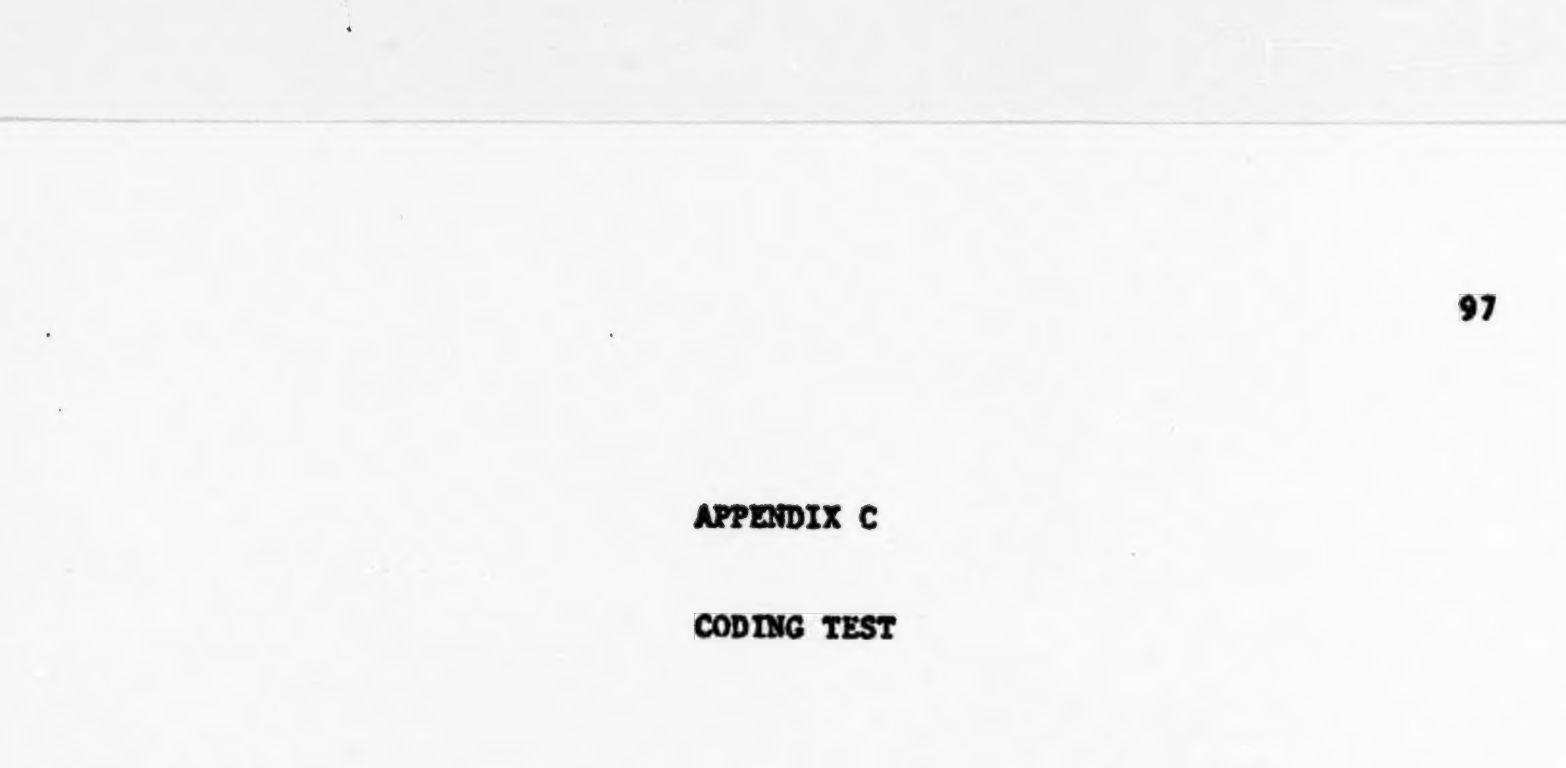
Scoring: The letter "f" following the item number indicates that an answer of "yes" is scored as internal control. The letter "p" signifies that an answer of "n" is scored as external control.

APPENDIX C

CODING TEST

CODING A
(5-7)

SAMPLE



TIME (120") ____ NO. RIGHT ____ SCORE ____

APPENDIX D

DIGIT SYMBOL TEST

CODING B
(6-15)

1	2	3	4	5	6	7	8	9
÷	)	+	⊢	⌝	V	(	-	⊣

SAMPLE

2	1	4	6	3	5	2	1	3	4	2	1	3	1	2	3	1	4	2	6	3	1	2	5	1

3	1	5	4	2	7	4	6	9	2	5	8	4	7	6	1	8	7	5	4	8	6	9	4	3

1	8	2	9	7	6	2	5	4	7	3	6	8	5	9	4	1	6	8	9	3	7	5	1	4

9	1	5	8	7	6	9	7	8	2	4	8	3	5	6	7	1	9	4	3	6	2	7	9	3

TIME (120")_____ SCORE (NO. RIGHT)_____

0180 6